

FORM PTO-3390 (REV. 12-2001)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER <b>PATRADE</b>	
<b>TRANSMITTAL LETTER TO THE UNITED STATES          DESIGNATED/ELECTED OFFICE (DO/EO/US)          CONCERNING A FILING UNDER 35 U.S.C. 371</b>				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) <b>10/089456</b>	
INTERNATIONAL APPLICATION NO. <b>PCT/DK00/00542</b>		INTERNATIONAL FILING DATE <b>29 September 2000</b>		PRIORITY DATE CLAIMED <b>1 October 1999</b>	
TITLE OF INVENTION <b>Method of Operation of a Printing Unit and Printing Unit for Offset Machine</b>					
APPLICANT(S) FOR DO/EO/US <b>Henrik CHRISTIANSEN</b>					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31) 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau) b. <input type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4) 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau) b. <input type="checkbox"/> have been communicated by the International Bureau c. <input type="checkbox"/> have not been made, however, the time limit for making such amendments has NOT expired d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)) 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5))					
<b>Items 11 to 20 below concern document(s) or information included:</b>					
11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included 13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment. 14. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment 15. <input type="checkbox"/> A substitute specification 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter 2 and 35 U.S.C. 1.821 - 1.825 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4) 20. <input type="checkbox"/> Other items or information:					

U.S. APPLICATION NO. <b>10/089456</b> INTERNATIONAL APPLICATION NO. <b>PCT/DK00/00542</b>				ATTORNEY'S DOCKET NUMBER <b>PATRADE</b>	
21. <input checked="" type="checkbox"/> The following fees are submitted <b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or IPO . . . . . <b>\$1040.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or IPO . . . . . <b>\$890.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO . . . . . <b>\$740.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) . . . . . <b>\$710.00</b>  International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) . . . . . <b>\$100.00</b>  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS PTO USE ONLY</b>          <div style="display: flex; justify-content: space-between;"> <span>\$ 1,040.00</span> <span></span> </div>	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e))				\$ 130.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	- 20 -		x \$18.00		
Independent claims	- 3 -		x \$84.00		
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				\$280.00	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$ 1,170.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2					
<b>SUBTOTAL =</b>				\$ 1,170.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f))					
<b>TOTAL NATIONAL FEE =</b>				\$ 1,170.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) \$40.00 per property					
<b>TOTAL FEES ENCLOSED =</b>				\$ 1,170.00	
				Amount to be refunded: \$	
				charged: \$	
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>1,170.00</u> to cover the above fees is enclosed.  b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.  c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>02-3704</u> . A duplicate copy of this sheet is enclosed.  d. <input type="checkbox"/> Fees are to be charged to a credit card. <b>WARNING:</b> Information on this form may become public. <b>Credit card</b> <b>information should not be included on this form.</b> Provide credit card information and authorization on PTO-2038.					
<b>NOTE:</b> Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO  <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">           James C. Wray            1493 Chain Bridge Road, Suite 3300            McLean, VA 22101             April 1, 2002         </div> <div style="width: 45%; text-align: center;">             SIGNATURE            James C. Wray            NAME            22,6933            REGISTRATION NUMBER         </div> </div>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

HENRIK CHRISTIANSEN

Serial No.: To be assigned

Filed: April 1, 2002

For: METHOD OF OPERATION OF A PRINTING UNIT AND PRINTING UNIT  
FOR OFFSET MACHINE

**PRELIMINARY AMENDMENT**

To the Director of Patents and Trademarks

Sir:

Before considering this application, kindly amend the  
application as follows:

In the Abstract:

Kindly consider the abstract on the cover sheet of published  
PCT Application WO 01/25010 A1.

In the Specification:

Page 1, after the title and before line 3, insert:

--This application claims the benefit of Danish Application  
No. PA 1999 01408 filed October 1, 1999 and PCT/DK00/00542 filed  
September 29, 2000.--

Page 2, before line 11, insert:

--Furthermore, GB-A-2,119,711 discloses a stationary fountain comprising a doctor blade co-operating with a ductor. A lacquer roller is displaceable between a first position for transferring water via a plate cylinder and a second position for transferring coating directly to the blanket cylinder. There is no disclosure that the doctor blade could be displaced together with the interactive roller as a unit.

**SUMMARY OF THE INVENTION--;**

before line 28, insert:

--The method and the apparatus make it possible that the doctor blade together with the roller form a unit which is slidable between the two positions.--

Page 5, before line 24, change "Description of the Drawing" to:

**--BRIEF DESCRIPTION OF THE DRAWINGS--;**

Page 6, before line 6, insert:

**--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--.**

In the Claims:

Kindly amend claims 1-9 as follows:

1. (Amended) A method for operating a printing unit in an offset machine in which the printing unit comprises a doctor blade used for coating and as moistening unit for applying water, wherein the doctor blade and an interacting roller are displaced between a first position for transferring water via a plate cylinder to a blanket cylinder and a second position for transferring coating directly to the blanket cylinder.

2. (Amended) A method according to claim 1, wherein the displacement is a pivoting about an axis in parallel with the rotational axis of the plate and blanket cylinder.

3. (Amended) A printing unit for use in a method according to claim 1 in an offset machine, comprising means for coating and means for applying water, and where the coating means and the water application means are constituted by a unit comprising a doctor blade and at least one roller for transferring coating or water from the doctor blade, wherein the coating and water application unit is arranged slidable between a first position for bringing said at least one roller in contact with a roller engaging the plate cylinder, and a second position for bringing said at least one roller in direct contact with the blanket cylinder of the printing unit.

4. (Amended) A printing unit according to claim 3, wherein the coating means only comprises one transfer roller in the shape of a screen roller transferring coating directly from the doctor blade to the blanket cylinder.

5. (Amended) A printing unit according to claim 3, wherein the coating means comprises transfer rollers in the form of a screen roller and a rubber roller for transferring water from the doctor blade to the plate cylinder and one screen roller for transferring coating directly to the blanket cylinder.

6. (Amended) A printing unit according to claim 3, wherein the doctor blade/transfer roller unit is mounted pivotably in relation to the plate cylinder and the blanket

cylinder between one of the engagement positions with the plate cylinder and the blanket cylinder.

7. (Amended) A printing unit according to claim 3, wherein the unit is provided with coupling means which are arranged for being connected releasably with coupling means in the frame of the offset machine, preferably coupling means for a cleaning unit known per se for the plate cylinder.

8. (Amended) A printing unit according to claim 3, wherein the transfer roller is driven by its own motor, preferably via a motor controlled by a line signal from the main machine.

9. (Amended) A printing unit according to claim 3, wherein the unit comprising the doctor blade and the at least one roller is mounted in the offset machine in an exchangeable way with the existing moistening unit of the offset machine.

**REMARKS UNDER 37 C.F.R. 1.111**

Consideration and allowance are respectfully requested.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made**".

Entry of the amendment and consideration and allowance of all claims are respectfully requested.

Respectfully,

James C. Wray, Reg. No. 22,693  
Meera P. Narasimhan, Reg. No. 40,252  
1493 Chain Bridge Road  
Suite 300  
McLean, Virginia 22101  
Tel: (703) 442-4800  
Fax: (703) 448-7397

April 1, 2002

**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In the Claims:**

Claims 1-9 have been amended as below:

1. (Amended) A method for operating a printing unit in an offset machine in which the printing unit comprises a doctor blade used for coating and as moistening unit for applying water, [characterised in that] wherein the doctor blade and an interacting roller are displaced between a first position for transferring water via a plate cylinder to a blanket cylinder and a second position for transferring coating directly to the blanket cylinder.
2. (Amended) A method according to claim 1, [characterised in that] wherein the displacement is a pivoting about an axis in parallel with the rotational axis of the plate and blanket cylinder.
3. (Amended) A printing unit for use in a method according to claim 1 [or 2] in an offset machine, comprising means for coating and means for applying water, and where the coating means and the water application means are constituted by a unit comprising a doctor blade and at least one roller for transferring coating or water from the doctor blade, [characterised in that] wherein the coating and water application unit is arranged slidable between a first position for bringing said at least one roller in contact with a roller engaging the plate cylinder, and a second position for bringing said at least one roller in direct contact with the blanket cylinder of the printing unit.
4. (Amended) A printing unit according to claim 3, [characterised in that] wherein the coating means only comprises one



transfer roller in the shape of a screen roller transferring coating directly from the doctor blade to the blanket cylinder.

5. (Amended) A printing unit according to claim 3, [characterised in that] wherein the coating means comprises transfer rollers in the form of a screen roller and a rubber roller for transferring water from the doctor blade to the plate cylinder and one screen roller for transferring coating directly to the blanket cylinder.

6. (Amended) A printing unit according to [any of claims 3-5] claim 3, [characterised in that] wherein the doctor blade/transfer roller unit is mounted pivotably in relation to the plate cylinder and the blanket cylinder between one of the engagement positions with the plate cylinder and the blanket cylinder.

7. (Amended) A printing unit according to [any of claims 3-6] claim 3, [characterised in that] wherein the unit is provided with coupling means which are arranged for being connected releasably with coupling means in the frame of the offset machine, preferably coupling means for a cleaning unit known per se for the plate cylinder.

8. (Amended) A printing unit according to [any of claims 3-7] claim 3, [characterised in that] wherein the transfer roller is driven by its own motor, preferably via a motor controlled by a line signal from the main machine.

9. (Amended) A printing unit according to [any of claims 3-8] claim 3, [characterised in that] wherein the unit comprising the doctor blade and the at least one roller is mounted in the offset

10059456 .052402

machine in an exchangeable way with the existing moistening unit of the offset machine.

**Method of operation of a printing unit and printing unit for offset machine****Background of the invention**

5 The present invention concerns a method for operating a printing unit in which the printing unit comprises a doctor blade used for coating and as moistening unit for applying water, and where the coating means and the water application means are constituted by a unit comprising a doctor blade and at least one roller for transferring coating or water from the doctor blade.

10 Offset machines are well-known within the art and are therefore only described briefly. A web or a sheet on which printing is to be performed is led around back-pressure rollers or transfer rollers. The web or the sheets are brought into contact with a blanket cylinder for being applied the print to the applied in each single printing unit in the offset machine. The blanket cylinder is in contact with a plate cylinder transferring  
15 the colour print to be placed on the web. The plate cylinder is in contact with a moistening unit and a inking unit applying water and ink, respectively. Thus, an offset plate on the plate cylinder is rotated whereby water susceptible parts are moistened by the rollers of the moistening unit. Then the ink susceptible parts of the offset plate are supplied with ink from the ink rollers in the inking unit. The print image formed is  
20 then deposited on the blanket cylinder which further prints the ink on the web or the sheet. Preferentially, it will be a paper web but other materials may also be printed.

A printing unit according to the present invention may be used in a traditional offset machine, for example of the kind described in European patent application no.  
25 767,058. The content of this patent application is hereby incorporated by reference as the printing unit may be a part of an offset machine which is built up according to the same principle and with the same paper delivering and paper receiving means at the beginning and the finish of the printing unit as well as corresponding means for transferring paper web or single sheets between different printing units disposed in succession can be used for imparting the web the finished print. Also, the same kinds of  
30 printing ink may be used. Offset machines may be equipped with a coating unit. The

coating unit will typically be constructed with a cylinder on which the coating is applied from a roller arrangement which is supplied from a vessel with clear coating.

5 In International patent application PCT/DK98/00303 there is described a system of the type mentioned in the introduction which is improved and thereby enables a broader application and more efficient operation of printing units in offset machines, where the printing unit may be used for coating and water application. In this system, the coating is established indirectly via the plate cylinder. However, it is desirable to apply coating directly on the blanket cylinder due to quality and finish in the formed print.

10 It is the object of the present invention to indicate a method for operating a printing unit and a printing unit for an offset machine which enables a wider use and a more efficient operation of printing units in existing and new offset machines. Furthermore, it is an object to indicate a moistening unit which simultaneously may be used for coating and which also enables flexoprinting in an offset machine.

15 According to the present invention this is achieved by a method which is peculiar in that the doctor blade and an interacting roller are displaced between a first position for transferring water via a plate cylinder to a blanket cylinder and a second position for transferring coating directly to the blanket cylinder.

20 The printing unit for use by the method is peculiar in that the coating and water application unit is arranged slidable between a first position for bringing said at least one roller in contact with a roller engaging the plate cylinder, and a second position for bringing said at least one roller in direct contact with the blanket cylinder of the printing unit.

25 By using such a method and such a unit it becomes possible to make offset machines so that they obtain wider application, and simultaneously the process may run more efficiently as the coat is not applied indirectly via the plate cylinder to the blanket cylinder. The slidable unit may be designed so that it may be retrofitted on existing offset machines.

Coating or water from the chamber is transferred to the blanket cylinder or the plate cylinder via a roller which preferably is a screen roller in the form of an Anilox roller, and the liquid lying in the cups of the screen roller is transferred to the blanket or plate cylinder. Transfer of water to the plate cylinder occurs as a rubber roller is inserted between the screen roller and the printing plate of the plate cylinder. Transfer of coating occurs directly to the blanket cylinder from the screen roller.

When the transfer unit is displaced to its second position for contact with the blanket roller, it is also possible to run flexographic printing. The blanket cylinder is provided with a printing plate, and the plate cylinder is displaced out of contact with the blanket cylinder. Then flexo inks may be transferred from the chamber and the transfer roller in the shape of an Anilox roller to the printing plate.

If a completely covering print is desired, a blanket may be used on the blanket cylinder as in the case of coating.

It will be possible to use separate doctor blades for inking/coating and water application. However, it will also be possible to use one and the same doctor blade for coating and water application.

In a coating unit, which typically is the last printing unit in an offset machine, it is advantageous that the coating means only comprise one screen roller in the form of an Anilox roller for transferring the coating which is applied directly from the doctor blade to the blanket cylinder.

Most machines will be provided with a frame with coupling means for supporting a cleaning system consisting of a liquid spray nozzle and cleaning paper. In some cases the printing unit according to the invention may be mounted in coupling means of this frame. Hereby, the need for special adaptation of the machine frame is avoided. Hereby it becomes particularly simple to modify an existing machine as the coupling

means located in the frame of the offset machine are re-used as coupling means for the unit according to the invention.

5 The motor used for driving the screen roller is independent in order to adjust the rotational speed to different offset machines. Thus the unit does not need a special adaptation of the drive of the screen roller for different offset machines. In the machine, there will only be need for a suspension which in its most simple form consists of four pegs or screws on a rack.

10 By using a unit according to the invention, which is based on a doctor blade, it will be possible to apply highly pigmented inks, as for example metal enamels. This will not be possible with common offset printing units as pigments/inks will clog here and make impossible the formation of a quality print.

15 The unit according to the invention may also be use as a moistening unit. In the known moistening units, an environmental problem arises. In order to transfer the moistening water with the present roller arrangement, it is necessary to add solvents. At the moment, this has been prohibited at several places.

20 Alternatively, it has been attempted to solve the problem by teflon coating for forming a kind of mask with the purpose of avoiding ink depositing in certain areas. This is known as dry offset and is a different process in principle. Thus teflon has been used for substituting the water application from the moistening rollers. This system has an advantage as the paper is not moistened and thereby the risk that coating adheres badly  
25 do not arise.

Instead of using the traditional moistening units, there may be used a system which comprises a doctor blade and a screen roller and a rubber roller between the doctor blade and the plate cylinder as described in the above International patent application.

30 This is advantageous as faster operation than previously is feasible. The amount of water or water sausage formed in a wedge-shaped interspace between the rubber roller and the plate cylinder may be varied by running with varied speed between the rubber

roller and the plate cylinder. By running the rubber roller with greater speed it is thus possible to provide a greater amount of water in the wedge. The amount of water may also be adjusted by varying the slot width occurring between the rubber roller and the plate cylinder. The printing unit according to the invention is thus advantageous in that the amount of water situated in the slot may be varied according to need.

As printing unit may be intended for coating and as moistening unit, it will be possible to use the same unit consisting of a doctor blade and transfer roller for both water and coating.

By using a common moistening unit it will not be possible to apply coating. Due to the surface speeds, a great and unallowable contamination of the surroundings will occur as coating will be sprayed from the periphery of the roller and from the ends of the rollers. By using the unit according to the invention for coating, it will be possible to avoid contamination.

It is also possible that, together with a plate cylinder and a blanket cylinder, there may be provided two units according to the invention of which one unit is used for coating and the other for water application. Hereby it becomes possible to provide stripes of coating and stripes of ink side by side on the plate cylinder. This is made possible as the doctor blade may be divided up for giving off liquid/ink over a part of their length. Hereby is thus achieved the possibility of making print with quite new effects.

#### **Description of the drawing**

In the following, the invention will now be explained with reference to the accompanying schematic drawing, where:

- Fig. 1 shows a side view of a typical offset machine comprising four printing units,  
Fig. 2 shows a partial view for illustrating a known printing unit comprising a moistening unit and an inking unit,  
Fig. 3 shows a view corresponding to Fig. 2 for illustrating an embodiment of a printing unit according to the above International patent application,

Fig. 4 shows a view corresponding to Fig. 3 for illustrating a first embodiment of a printing unit according to the invention, and

Fig. 5 shows a view for illustrating a further embodiment of a printing unit according to the invention.

5

Fig. 1 shows a traditional offset printing machine 1 comprising four printing units 2. The machine has a transport direction 3 for sheets that are printed. The sheets comes from a delivery station 4 and are conveyed to a receiving station 5 by means of a delivery arrangement 6 comprising a conveyor belt 7. The conveyor belt 7 runs about two chain wheels 8,9. The single sheets are conveyed from the unit 4 via a path 10 around an impression cylinder or back-pressure cylinder 12. The single sheets are placed at a position indicated by 13. The sheets are thus placed in an area between a blanket cylinder 14 and the impression cylinder 12. The blanket cylinder 14 is in contact with a plate cylinder 15. Besides the impression cylinder 12, the offset machine also comprises transfer cylinders 16 for the sheets.

15

The offset machine furthermore comprises gripping means for holding sheets and a long row of rollers for moistening units and inking units which are in connection with the plate cylinder. Since these are well-known, they are not shown in Fig. 1 which serves as illustration of the structure of the offset unit. These rollers, however, appear in Fig. 2.

20

Fig. 2 shows a printing unit 1 comprising an impression cylinder 12, a blanket cylinder 14 and a plate cylinder 15. These cylinders are rotating according to the arrows 17,18, 19. A moistening unit comprises a container 21 for water. From the water container 21 the water is led via a system of rollers 22 to the last contact roller 23 which is in contact with the plate cylinder 15. The printing unit 1 furthermore comprises an inking unit 24 comprising a number of rollers 25 transferring ink from an ink container 26 to contact rollers 27 which apply the ink on a soft printing plate (not shown) situated on the plate cylinder 15. The printing plate located on the plate cylinder will thus be imparted ink in the areas where water has not been applied from the moistening unit 20. The printing plate is usually an etched metal plate.

25

30



As a coating unit is built up in principle as the moistening unit 20, Fig. 2 may also be said to illustrate a coating unit. The coating will thus be conveyed up from the container 21 containing coating and transferred via rollers 22 to the last contact roller 23 which is also called the forming roller. However, a coating unit will preferably be mounted on the blanket cylinder 14 for avoiding undesired dirtying.

The embodiment shown have some environmental and printing disadvantages. Instead of using the existing moistening unit, the printing unit in Fig. 2 may be modified as illustrated in Fig. 3.

In Fig. 3 the contact roller 23 is substituted by a unit 28 comprising a doctor blade system 30 and a screen roller 29, preferably an Anilox roller of the kind also used for flexographic printing. The screen roller 29 may be mounted directly in the existing suspension. Between the screen roller 29 and the plate cylinder 15 there is mounted a soft roller 32, preferably a rubber roller. The unit 28 may, even by great peripheral speeds, ensure a constant and uniform amount of water and/or coating transferred to the plate cylinder 15. If the unit 28 is desired to be used for coating, the rollers 27 of the inking unit are brought out of contact with the plate cylinder 15. If the unit 28 is used for water application, the inking unit 24 is kept in engagement with the plate cylinder 15.

The embodiment shown in Fig. 3 may be changed when it is only used for coating. Thus the hard screen roller 29 may be used directly without a soft roller for coating. This will, however, necessitate the use of a rubber blanket on the plate cylinder 15.

The printing unit shown will be very simple and easy to maintain. At the same time, the system is easy to replace depending on whether the printing unit is desired to be used for one or the other purpose. Thus it will be possible, according to wish, to use the existing moistening unit concurrently with the unit 28 according to the invention.

When the unit 28 is used for water application, it will be easy to adjust the water amount in a simple way. Such an adjustment is difficult in traditional moistening units where the rollers are running synchronously with the plate cylinder 15. The rubber roller 32 may be provided with its own motor which is driven independently of the plate cylinder. This creates possibility of a differentiated periphery speed and thereby possibility of stemming up of greater or lesser amount of water in the wedge-shaped interspace 31 formed between the rubber roller 32 and the plate cylinder 15.

In Fig. 4 is shown a first embodiment of a printing unit 1 according to the invention. Fig. 4 differs from the printing unit shown in Fig. 3 by the unit 28 being suspended pivotably about an axis 33 of pivot running in parallel with axes of rotation 34 and 35 for the blanket cylinder 14 and the plate cylinder 15. The unit 28 is shown in a first position 36, where the screen roller 29 is in contact with a soft roller 32 engaging the plate cylinder 15, and a second position 37 where the screen roller 29 is directly engaging the blanket cylinder 14. These two positions are used for water application (position 36) and coating (position 37), respectively.

Fig. 5 shows a further embodiment of a printing unit according to the invention. In this printing unit there is simultaneous use of two units 28. The unit 28 illustrated to the right in the Figure is used for applying moistening water. The unit 28 shown to the left is used for applying coating. Since it is possible to divide up the doctor blade over its length, it will be possible to apply coating in stripes where the moistening unit does not apply any moisture. Such an effect will not be possible in traditional printing units. The coating unit and the moistening unit as illustrated in Fig. 5 will function according to the same principle as explained above with reference to the preceding Figures. Alternatively, the unit 28 in the left side may be used for transferring coating and flexographic ink. If there is a blanket on the blanket cylinder 14, a completely covering ink will be printed, and if a printing plate is placed on the blanket cylinder 14, a desired flexographically printed image may be established.

## CLAIMS

1. A method for operating a printing unit in an offset machine in which the printing unit comprises a doctor blade used for coating and as moistening unit for applying water, characterised in that the doctor blade and an interacting roller are displaced between a first position for transferring water via a plate cylinder to a blanket cylinder and a second position for transferring coating directly to the blanket cylinder.
2. A method according to claim 1, characterised in that the displacement is a pivoting about an axis in parallel with the rotational axis of the plate and blanket cylinder.
3. A printing unit for use in a method according to claim 1 or 2 in an offset machine, comprising means for coating and means for applying water, and where the coating means and the water application means are constituted by a unit comprising a doctor blade and at least one roller for transferring coating or water from the doctor blade, characterised in that the coating and water application unit is arranged slidable between a first position for bringing said at least one roller in contact with a roller engaging the plate cylinder, and a second position for bringing said at least one roller in direct contact with the blanket cylinder of the printing unit.
4. A printing unit according to claim 3, characterised in that the coating means only comprises one transfer roller in the shape of a screen roller transferring coating directly from the doctor blade to the blanket cylinder.
5. A printing unit according to claim 3, characterised in that the coating means comprises transfer rollers in the form of a screen roller and a rubber roller for transferring water from the doctor blade to the plate cylinder and one screen roller for transferring coating directly to the blanket cylinder.

6. A printing unit according to any of claims 3-5, characterised in that the doctor blade/transfer roller unit is mounted pivotably in relation to the plate cylinder and the blanket cylinder between one of the engagement positions with the plate cylinder and the blanket cylinder.

5

7. A printing unit according to any of claims 3-6, characterised in that the unit is provided with coupling means which are arranged for being connected releasably with coupling means in the frame of the offset machine, preferably coupling means for a cleaning unit known per se for the plate cylinder.

10

8. A printing unit according to any of claims 3-7, characterised in that the transfer roller is driven by its own motor, preferably via a motor controlled by a line signal from the main machine.

15

9. A printing unit according to any of claims 3-8, characterised in that the unit comprising the doctor blade and the at least one roller is mounted in the offset machine in an exchangeable way with the existing moistening unit of the offset machine.

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
12 April 2001 (12.04.2001)

PCT

(10) International Publication Number  
**WO 01/25010 A1**

(51) International Patent Classification<sup>7</sup>: B41F 7/26, 23/08

(21) International Application Number: PCT/DK00/00542

(22) International Filing Date:  
29 September 2000 (29.09.2000)

(25) Filing Language: Danish

(26) Publication Language: English

(30) Priority Data:  
PA 1999 01408 1 October 1999 (01.10.1999) DK

(71) Applicant (for all designated States except US): TRESU  
PRODUCTION A/S [DK/DK]; Eegsvej 14-16, DK-6091  
Bjert (DK).

(72) Inventor; and

(75) Inventor/Applicant (for US only): CHRISTIANSEN,  
Henrik [DK/DK]; Strandvejen 203, DK-2900 Hellerup  
(DK).

(74) Agent: PATRADE A/S; Aaboulevard 21, DK-8000  
Aarhus C (DK).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AT  
(utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility  
model), DK, DK (utility model), DM, DZ, EE, EE (utility  
model), ES, FI, FI (utility model), GB, GD, GE, GH, GM,  
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility  
model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,  
MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,  
SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT,  
TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

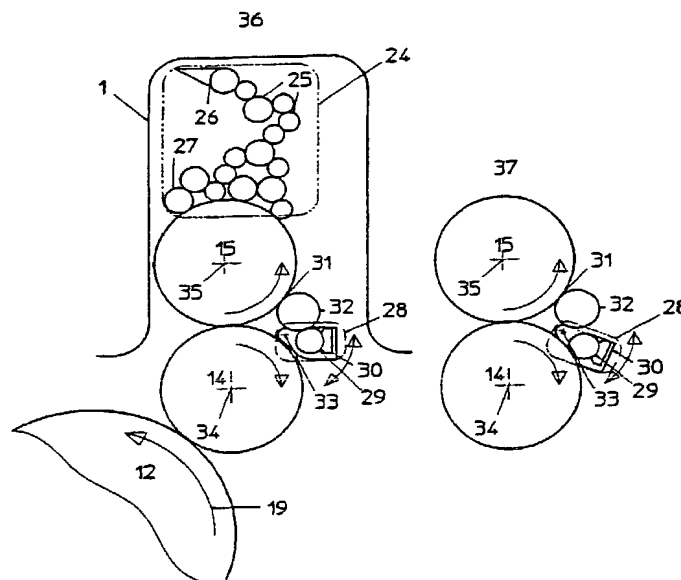
(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian  
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European  
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,  
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,  
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

## Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD OF OPERATION OF A PRINTING UNIT AND PRINTING UNIT FOR OFFSET MACHINE



(57) Abstract: There is described a printing unit (1) for use in an offset machine. The printing unit enables wider application of offset machines (1). This is achieved by the coating means and the water application means comprising a unit (28) consisting of a doctor blade (30) and at least one roller (29, 32) for transferring coating or water from the doctor blade to the plate cylinder (15)/blanket cylinder (14) of the printing unit. The unit (28) is arranged for pivoting so that water is transferred to plate cylinder, and coating is transferred directly to the blanket cylinder.



WO 01/25010 A1

1/5

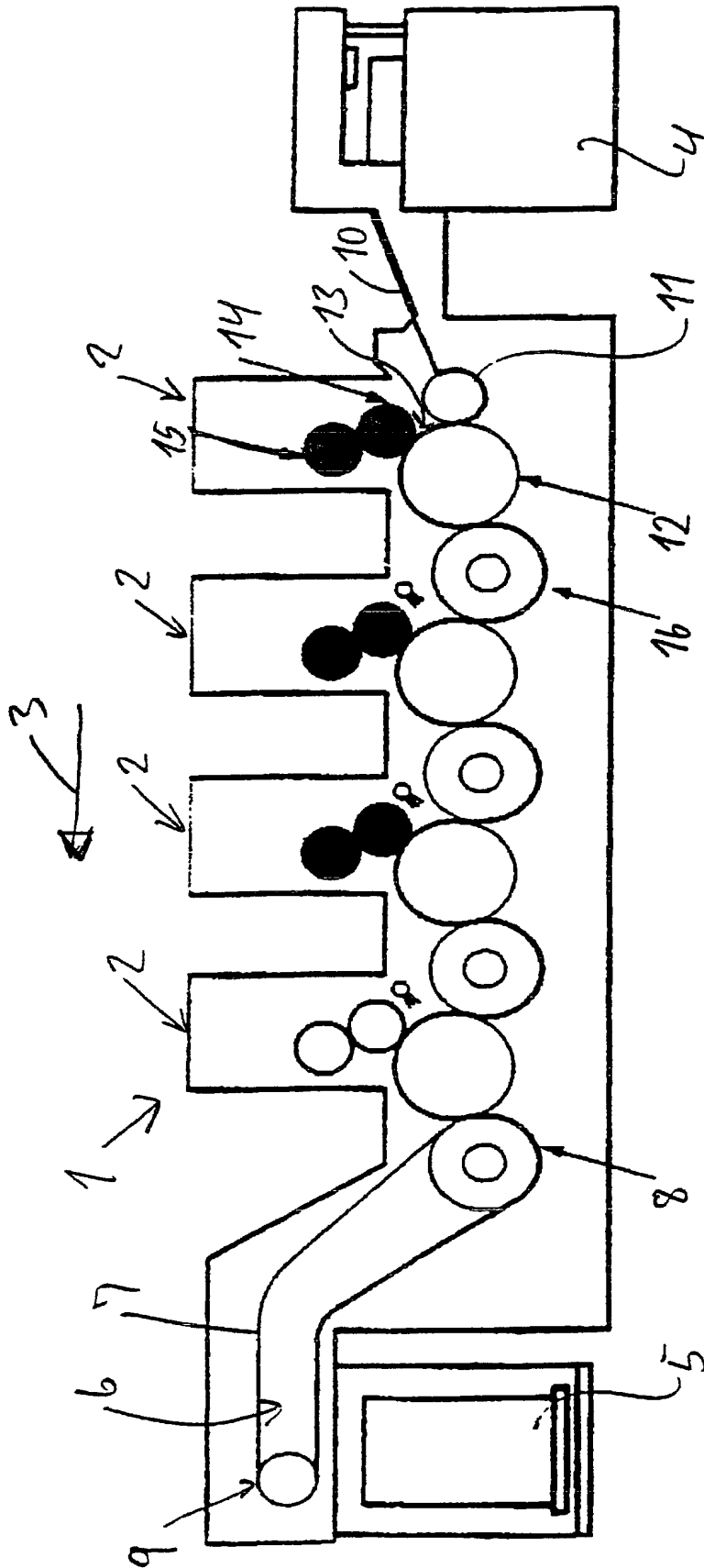


FIG. 1

FIG.2

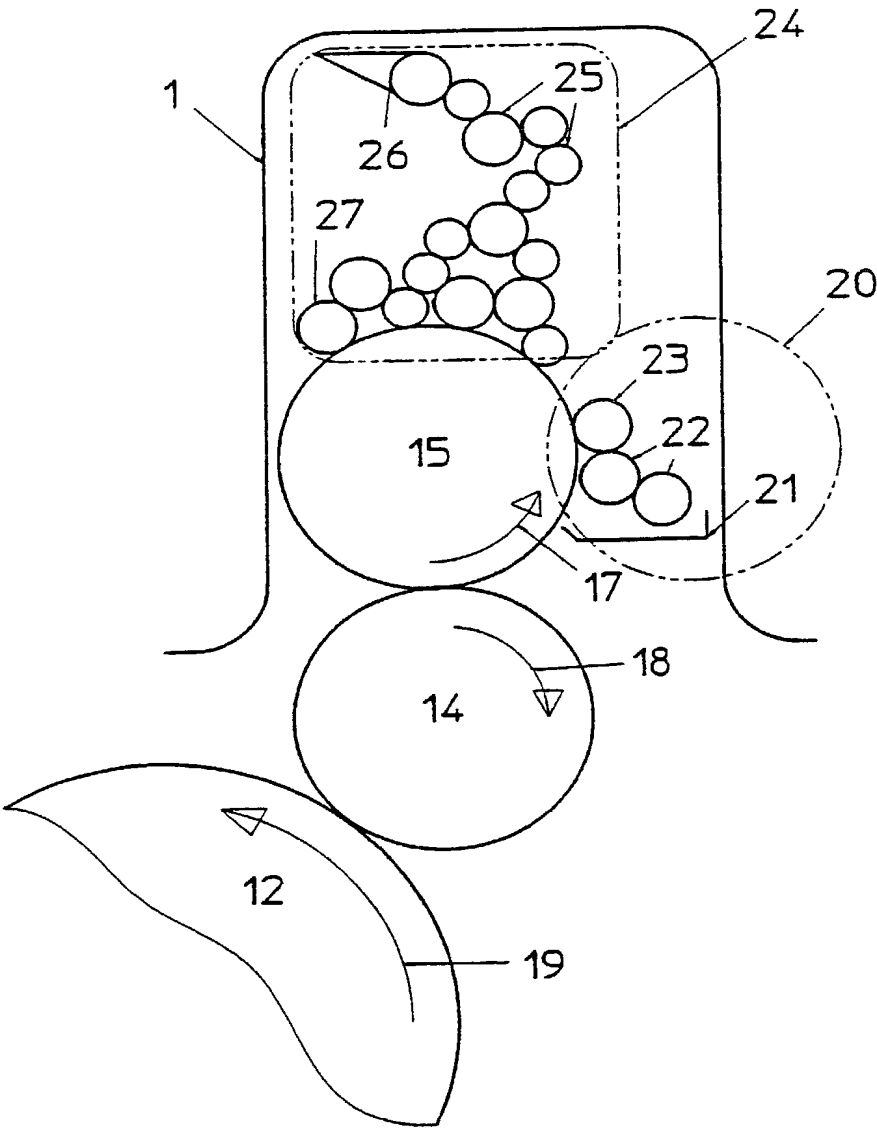


FIG.3

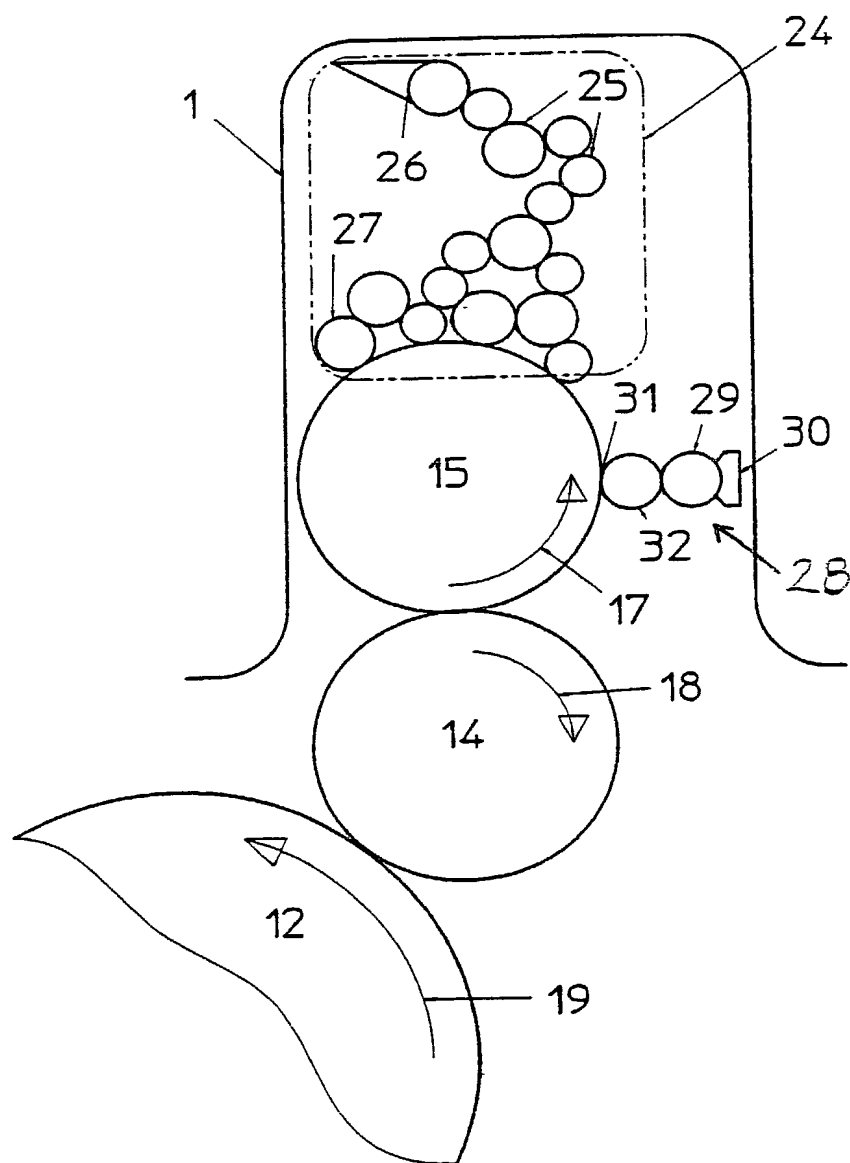
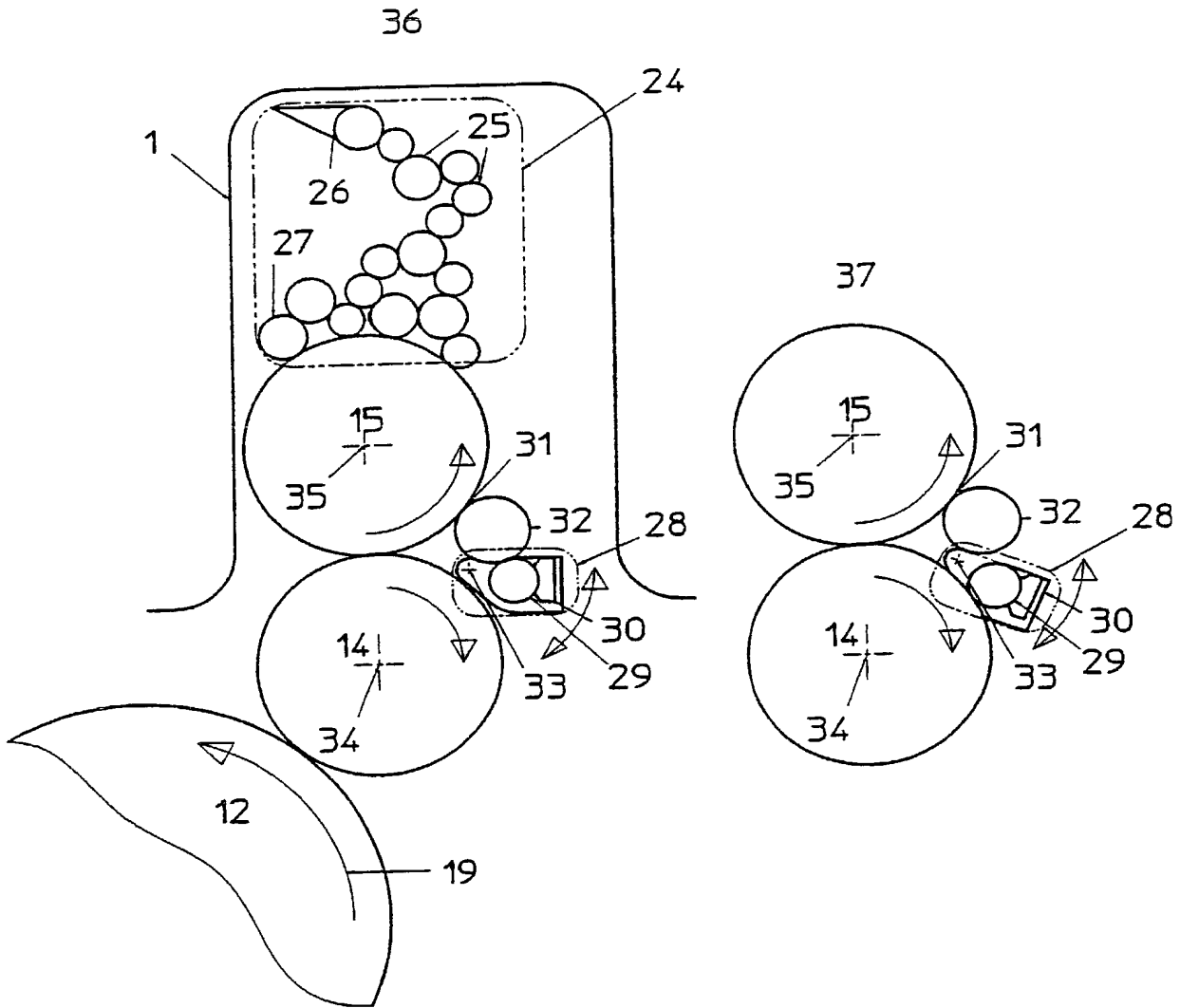


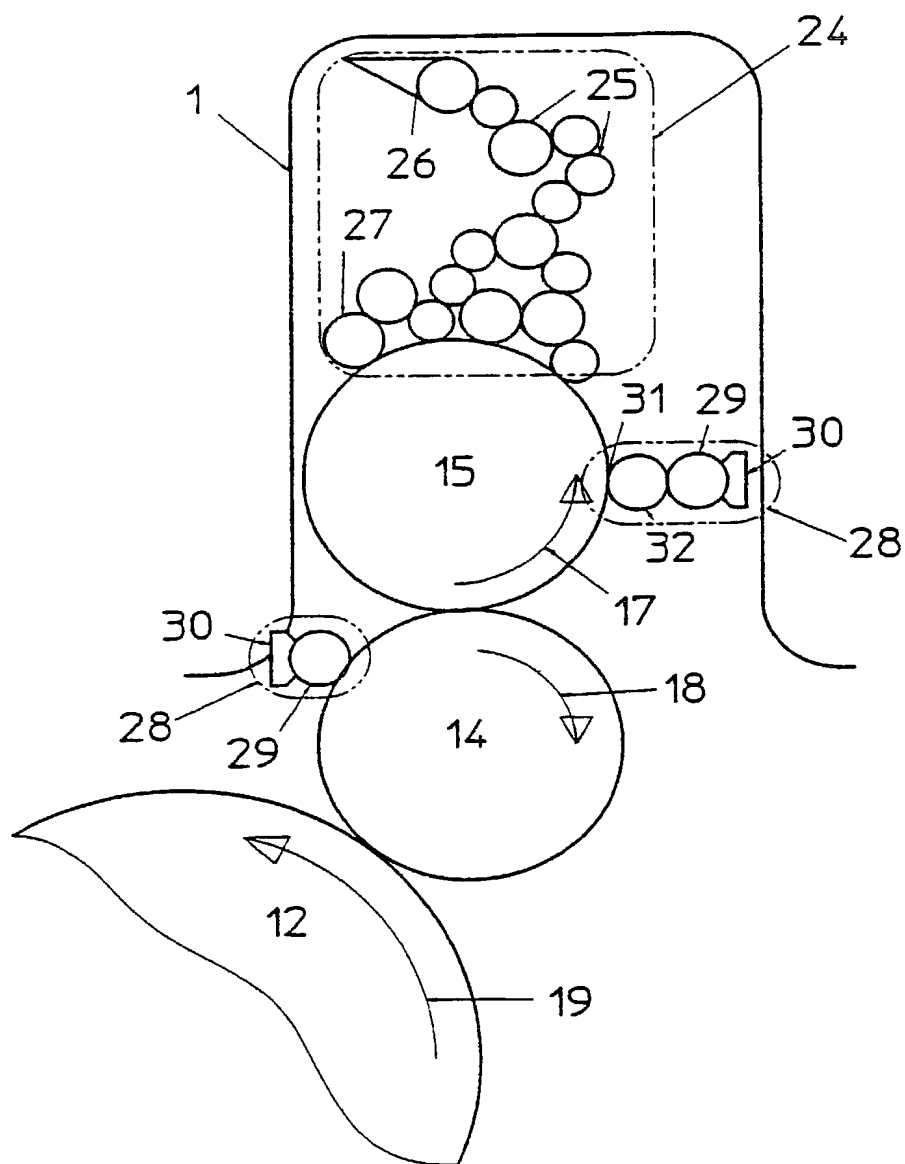


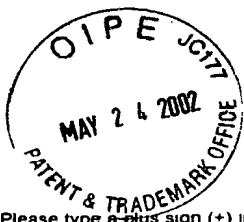
FIG.4



5/5

FIG.5





10089456 052402

Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (10-00)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

**DECLARATION FOR UTILITY OR  
DESIGN  
PATENT APPLICATION  
(37 CFR 1.63)**

☐ Declaration Submitted with Initial Filing      OR      ☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number	PATRADE
First Named Inventor	CHRISTIANSEN, Henrik
<b>COMPLETE IF KNOWN</b>	
Application Number	10 / 089,456
Filing Date	04/01/2002
Group Art Unit	
Examiner Name	

**As a below named inventor, I hereby declare that:**

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Method of operation of a printing unit and printing unit  
for offset machine

(Title of the Invention)

the specification of which

☐ is attached hereto  
OR

04/01/2002

as United States Application Number or PCT International

☒ was filed on (MM/DD/YYYY) September 29, 2000

(if applicable).

Application Number PCT/DK00/00542 and was amended on (MM/DD/YYYY) 04/01/2002  
10/089,456

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
PA 1999 01408 PCT/DK00/00542	Denmark PCT	10/01/1999 09/29/2000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

Burden Hour Statement. This form is estimated to take 21 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

10039456 002402

Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (10-00)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

## DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☐ Customer Number or Bar Code Label  OR ☒ Correspondence address below

Name James C. Wray

Address 1493 Chain Bridge Road

Address Suite 300

City McLean

State VA

ZIP 22101

Country US

Telephone (703) 442-4800

Fax (703) 448-7397

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR :

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any]) Henrik

Family Name or Surname Christiansen

Inventor's Signature

Date

2002-09-04

Residence: City

Hellerup

State DK

Country DK

Citizenship Danish

Mailing Address Strandvejen 203,

Mailing Address

City Hellerup

State DK

ZIP 2900

Country Denmark

NAME OF SECOND INVENTOR:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

Family Name or Surname

Inventor's Signature

Date

Residence: City

State

Country

Citizenship

Mailing Address

Mailing Address

City

State

ZIP

Country

☐ Additional inventors are being named on the \_\_\_\_\_ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.

Please type a plus sign (+) inside this box → ☐

10/089,456, 04/01/2002

PTO/SB/81 (10-00)

Approved for use through 10/31/2002. OMB 0651-0035

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# POWER OF ATTORNEY OR AUTHORIZATION OF AGENT

Application Number	10/089,456
Filing Date	04/01/2002
First Named Inventor	CHRISTIANSEN, Henrik
Group Art Unit	
Examiner Name	
Attorney Docket Number	PATRADE

I hereby appoint:

☐ Practitioners at Customer Number

OR

☒ Practitioner(s) named below:

Place Customer  
Number Bar Code  
Label here

Name	Registration Number
James C. Wray	22,693
Meera P. Narasimhan	40,252

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

☐ The above-mentioned Customer Number.

OR

☒ Firm or  
Individual Name

James C. Wray

Address 1493 Chain Bridge Road

Address Suite 300

City McLean State VA Zip 22101

Country US

Telephone (703) 442-4800 Fax (703) 448-7397

I am the:

☐ Applicant/Inventor.

☒ Assignee of record of the entire interest. See 37 CFR 3.71.  
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

## SIGNATURE of Applicant or Assignee of Record

Name	Tresu Production A/S
Signature	Managing Director <i>Erik Gydesen</i> BSc. Mechanical
Date	Henrik Leimand <i>170502</i> Erik Gydesen

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☐ \*Total of \_\_\_\_\_ forms are submitted.

Burden Hour Statement: This form is estimated to take 3 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.